## Journal of Computational Physics



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#### Journal Mission

The mission of *Journal of Computational Physics* is to publish (i.e., to announce, to send forth, to put into circulation) material that will assist in the reliable and accurate computation of scientific problems, especially those in the physical and engineering sciences. To qualify for publication a paper needs to meet criteria of suitability, correctness, significance, and presentation. The mission of *JCP* is not to validate research and then to archive it in a form that improves the author's chances of tenure or promotion.

#### Suitability

Generally, a paper suitable for *JCP* will be concerned with the development or testing of algorithms for scientific computing. Hardware design will not usually be of interest, but issues of computer science are if they impact on the algorithms, e.g., efficient use of machine architecture. Papers having a largely mathematical content are acceptable provided they are clearly addressed to a practical objective, but if the interest resides largely in the technicalities of the proofs there are more suitable journals. Papers that employ standard algorithms in order to explore some specific application should normally be sent to a journal specializing in that application.

#### Correctness

Because scientific computing does not yet rest on rigorous mathematical foundations there will often be real doubt whether a given approach is actually "correct." Papers that are open to such doubts are quite acceptable provided they meet normal standards of scientific objectivity.

#### Significance

Research papers must contain some element of genuine novelty. However, unmotivated novelty is all too easy to achieve and will not be encouraged. Acceptable research papers will usually

- describe a method that can achieve some task not previously possible, or
- describe a method that improves substantially on either the accuracy or the efficiency of previous methods, or
- extend an established method to make it more widely applicable, or
- analyze an existing method to give greater insight or confidence in its use, or
- develop discrete models of some significant physical problem, or
- analyze the nature of some computational problem in a way that sheds light on how it may possibly be solved.

Lists like this cannot be exhaustive; the test to be applied to the exceptions is whether the paper would interest readers who are interested by the list.

Review papers should be of interest to the widest possible readership, and wherever possible should aim at providing a critical perspective.

#### Presentation

The odds are remote that any of your readers, or even your reviewers, will be working on precisely your problem. Even if they are, they probably have their own favorite method and will not immediately abandon it for yours. However, your readers do want to learn from your experiences, and will hope to find somewhere a clear statement of what there is to be learned. This will motivate them to master the details. Remember that readers of JCP come from many disciplines, and therefore try to avoid, or at least explain, specialized jargon. Any authors who have difficulty writing clear technical English may find it helpful to consult "The science of scientific writing" by G. D. Gopen and J. A. Swan in American Scientist, Vol. 78, No. 6, November-December, 1990. Even those who do not think they have a problem will probably gain insight from this excellent article. Also, the Style Manual, 1990, of the American Institute of Physics contains much useful advice. Symbols that are unusual or used infrequently must be identified in order to avoid misinterpretation and unnecessary proof corrections.

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- 3. R. Gross, M. Koyanagi, H. Seifert, and R. P. Huebener, Article title, in *Proceedings*, 17th Int. Conf. on Low Temperature Physics, Karlsruhe, West Germany, 1984, edited by U. Eckern et al. (North-Holland, Amsterdam, 1984), p. 431.

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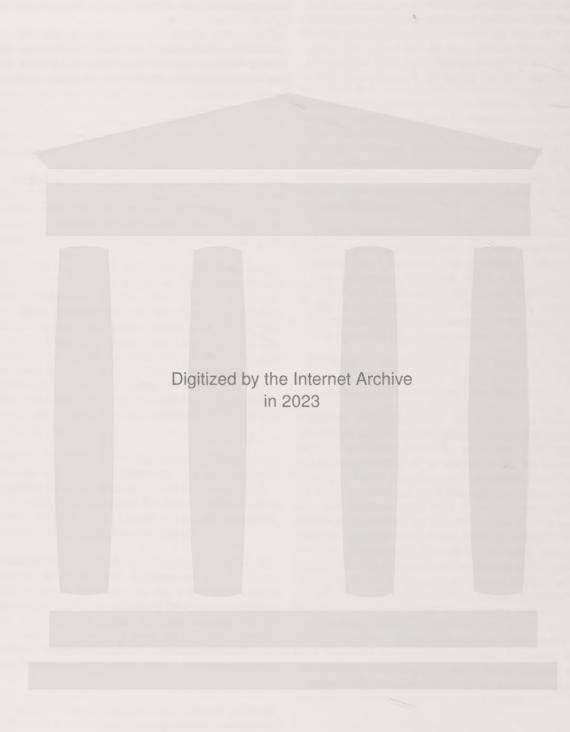
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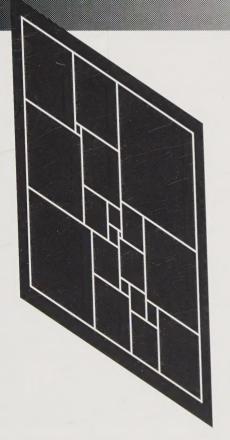
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